

Task #1

Explore the key issues and challenges related to the Future of National Meteorological and Hydrological Services (NMHSs)



Prioritization Of Issues:

Future of NMHSs



Combined Table Votes: Summary of Priorities

<u>Priority Order</u>		<u>Number of Votes</u>	
1.	National need of weather and climate services, especially for extreme results.	19	
2.	Roles of NMHS vis a vis other service providers.	18	
3.	International responsibilities and obligations.	17	<div style="border: 1px solid black; padding: 2px; text-align: center;">Tie Vote</div>
3.	Adequate government support funding for NMHS.	17	
4.	Impacts of commercialization on NMHS.	13	
5.	Basic functions of NMHS.	12	
6.	National legislation/policy relevant to NMHS domestic operation.	11	
7.	External assistance for developing countries.	6	
8.	Status and visibility of NMHSs.	3	
<u>Addition</u>			
9.	Future depends on universities and research labs and technical advancements.	3	

Summary of Issues Prioritized

Table 1

1. Basic functions of NMHSs. (Votes: 5)
2. National needs of weather and climate services, especially for extreme events. (Votes: 3)
3. Roles of NMHSs vis-à-vis other service providers. (Votes: 3)
4. International responsibilities and obligations. (Votes: 5)
5. Adequate governmental support/funding for NMHSs. (Votes: 5)
6. Impacts of commercialization on NMHSs. (Votes: 1)
7. National legislation/policy relevant to NMHS domestic operation.
8. Status and visibility of NMHSs. (Votes: 1)
9. External assistance for developing country NMHSs.

Table 2

1. Basic functions of NMHSs. (Votes: 4)
2. National needs of weather and climate services, especially for extreme events. (Votes: 3)
3. Roles of NMHSs vis-à-vis other service providers. (Votes: 5)
4. International responsibilities and obligations. (Votes: 4)
5. Adequate governmental support/funding for NMHSs. (Votes: 3)
6. Impacts of commercialization on NMHSs. (Votes: 3)
7. National legislation/policy relevant to NMHS domestic operation.
8. Status and visibility of NMHSs.
9. External assistance for developing country NMHSs. (Votes: 2)

Table 3

1. Basic functions of NMHSs.
2. National needs of weather and climate services, especially for extreme events.
3. Roles of NMHSs vis-à-vis other service providers. (Vote: 4)
4. International responsibilities and obligations.
5. Adequate governmental support/funding for NMHSs. (Vote: 7)
6. Impacts of commercialization on NMHSs. (Vote: 1)
7. National legislation/policy relevant to NMHS domestic operation. (Vote: 5)
8. Status and visibility of NMHSs. (Vote: 1)
9. External assistance for developing country NMHSs. (Vote: 1)

Table 4

1. Basic functions of NMHSs. (Votes: 3)
2. National needs of weather and climate services, especially for extreme events. (Votes: 4)
3. Roles of NMHSs vis-à-vis other service providers. (Votes: 5)
4. International responsibilities and obligations. (Votes: 3)
5. Adequate governmental support/funding for NMHSs. (Votes: 1)
6. Impacts of commercialization on NMHSs. (Votes: 5)
7. National legislation/policy relevant to NMHS domestic operation. (Votes: 1)
8. Status and visibility of NMHSs. (Votes: 1)
9. External assistance for developing country NMHSs. (Votes: 1)

Table 5

1. Basic functions of NMHSs.
2. National needs of weather and climate services, especially for extreme events *and an introduction of an observation network*. (Vote: 9)
3. Roles of NMHSs vis-à-vis other service providers. (Vote: 1)
4. International responsibilities and obligations. (Vote: 5)
5. Adequate governmental support/funding for NMHSs. (Vote: 1)
6. Impacts of commercialization (*and globalization*) on NMHSs. (Vote: 3)
7. National legislation/policy relevant to NMHS domestic operation. (Vote: 5)
8. Status and visibility of NMHSs.
9. External assistance for developing country NMHSs. (Vote: 2)

The Future of NMHSs:

Top Issues and Proposed Solutions



Task 1:

Explore the key issues and challenges related to the Future of National Meteorological and Hydrological Services (NMHSs)

Table 1

Additions to the Summary of Issues

1. Technology moving faster than governments. Technology in developing countries.
2. Concern re: mitigation vs. prevention.
3. Education and training.
4. Language for communicating.

Prioritization of Issues (Top 3-5) items after voting)

1. Basic functions of NMHSs.
2. International responsibilities and obligations.
3. Adequate governmental support/funding for NMHSs.

Problem Solving: Basic Functions of NMHSs

What/How	Who
<ol style="list-style-type: none"> 1. As a world community, we <i>must</i> agree on a core set of functions for NMHS. 2. Fundamentally, adequate <i>funding</i> is critical. We must explore <i>new</i> and creative potential <i>funding sources</i> for the future of NMHS. 3. <i>Survivability</i> of NMHS is <i>linked</i> both to <i>funding</i> and effective relationships with others (e.g., private sector, media). 4. Once we agree on core functions, we can address the roles of others in the provision of services. 5. Consider legislation or policy necessary, including or beyond WMO-Resolution 40? 6. A critical factor in the success of NMHS, in the future, lies in the education of decision makers (government). 7. We need to address and leverage new technologies and private sector partnerships for future success. 8. Next steps – Need global mechanisms to coordinate. 	

Brainstorm

1. Core role – extreme events; but we need a strategy/policy to ensure this is done.
2. Need to ensure core data collection and exchange role is continued and funded.
3. Need to find ways for (public/government/private) funding for research development and development of observation systems.
4. Focus on “core” responsibilities to do that job better, don’t take on too many other responsibilities and reorganize NMHS accordingly.
5. Need process/method to educate/get governments to understand various core roles and responsibilities of other NMHS/governments.
6. Need to agree on and define roles.
7. Contribute to socio-economic development.
 - ~ Security
 - ~ Water development, management, and supply.
8. Disseminate warnings and forecasts to greatest number of people quickly and cost effectively.
9. Strategy needs to be developed to ensure NMHS carry out core roles in light of new technology and privatization – survivability and \$\$.
10. Work with private sector to ensure critical roles are accomplished; process and protocol – need private sector \$\$.
11. Education and appreciation of functions and products.
 - ~ Questions of policy, legislation, how to fund, etc.
12. WMO develop guidelines on basic functions/roles of NMHS.
13. Resolution 40 articulates roles; need to focus on 40.
14. Improve science and technology of services and education/training of personnel.
15. Identify resources for funding activities.
16. Need to develop way to market/educate public/private sectors on roles, mission, etc. – attribution.
17. Investigate global funding mechanisms (i.e., move to more global funding of observation systems).
18. Global mechanism needed for warnings and forecasts.
 - ~ Better coordination and collaboration.
19. Leverage media to be advocate of NMHS as authority.
20. Ensure public/private partnerships go beyond national borders.
 - ~ Education
 - ~ Process

Points of Views

1. Need to educate decision makers; define what public needs to know. Other decision makers: use/misuse our decisions in media not made by us but by others.
2. There is competition for same customer: “Life in business world” real competition embedded in strategy.
3. Define commercialization vs. private sector (non-official).
4. Define business use, limited internal resources to satisfy unlimited growing needs of community.
5. Shared set of assumptions.
6. Core activities basic function defined by “user”.
7. Define “User” vs. devise roles for different players.
8. Country’s needs (i.e., mitigate against national disaster. Addition – development). Promote every country should have a legal instrument that defines role of service.
9. We don’t always consider all the key decision-makers that “play” in Meteorological Services. Often folks are making decisions who don’t know anything about Meteorological data, etc.
10. Can we define commercialization, privatization of “official” sources of data vs. private sector (“unofficial” sources of data).
11. Using limited resources to meet unlimited needs. How to address this as a “business” matter?
12. Need a “Global Weather Industry model” with various players and roles and different kinds of users.
13. Consider “*survivability*” as too strong a word; carries a strong signal.
14. Effective relationship? How would you do this? *Mechanism*?

Table 2

Additions to the Summary of Issues

1. Managing change (page 16) - reframing how we think about things.

Prioritization of Issues (Top 3-5 items after voting)

1. Roles of NMHSs vis-a-vis other service providers.
2. International responsibilities and obligations.
3. Basic functions of NMHSs.

Problem Solving: Role of NMHS vis a vis other service providers

What/How	Who
1. International cooperation.	1. NMHS/Government
2. Domestic policy – Meteorological, environment, climate, etc.	2. Government
3. Domestic infrastructure – how far it goes.	3. NMHS
4. Observation warnings, alerts, advisories, public safety - official voice.	4. NMHS/Government
5. Role for R&D - not clear cut.	5. NMHS
6. National climate record – official voice.	6. NMHS/Government
7. Role of education: public outreach - weather and basic science. Certification for weather related issues.	7. NMHS
8. Government role to decide if supporting economic infrastructure (aviation, agriculture).	8. Government
9. Government decide how much NMHS commercial. How commercial the National Weather Service will be/should be? What extent should government legislate key element of mandates.	
10. Geneva presentation – Management of Meteorological Services. Present output of this conference.	10. Ivan would present, Gordon, Joe, Pierre, and Inge

Strategies

1. Agreement on how we would work together to make argument to government agencies.
 - ~ Environmental issue offer opportunity to discuss issues, mandates.
2. Get WMO address each issue, look at rationale behind these mandates.
 - ~ Flesh out what that does for country.
 - ~ Cost involved.
 - ~ What it will take for country to meet satisfactorily the mandates by laws, how to support by funding, and how to implement.
3. Country wise, address issues within our own countries.
4. Having more workshops at WMO to have dialogue built in to WMO meeting various constituency present at table.
5. Distribute proceedings.

Table 3

Additions to the Summary of Issues

10. Future depends on universities and research laboratories and technical advancements. (Vote: 3)
11. Future depends on driving forces ... socio-economic ... factors needed for sustainable development (Vote: 2)
12. Need for assuring adequate human resources (Number and quantity of staffing). (Vote: 1)
13. Ability to manage change by the NWS. (Vote: 1)
14. NMHSs ... implications of the solutions ... do the solutions lead to improvement or degradation of NMHSs? (Vote 1)
15. New functions and services of NMHS.

Prioritization of Issues (Top 3-5 items after voting)

1. Roles of NMHSs vis-à-vis other service providers.
2. Adequate governmental support/funding for NMHSs.
3. National legislation/policy relevant to NMHS domestic operation.
4. Future depends on universities and research laboratories and technology advancements.
5. Future depends on driving forces ... socio-economic ... factors needed for sustainable development..

Problem Solving: Adequate government support/funding for NMHSs

1. Adequate, not unlimited within national priorities.
2. Lack of appropriate priorities for weather services.
3. Adequate ... implies oversight and interaction with other providers.
4. Adequate funding to do whatever is defined within country.
5. Consolidated in one agency or parceled out ... what is "government" needs as focal point within country.
6. Challenge ... general solution must be applied across different political structures.

Problem Solving: Adequate Government support/funding

Strategy

What/How	Who
Part I. <u>"Foundation"</u> 1. Define funding needs - all NMHSs activities 2. Define core activities (Global citizenship responsibilities)	WMO with Directors
Part II. <u>"Influence" (WMO take more visible, aggressive role with key players)</u> 1. Policy Makers ~ Invite to key WMO events ~ Engage in key activities 2. Public ~ Understand public needs and priorities ~ Educate about weather services 3. Media ~ Help them understand weather issues ~ Work with them to get services out accurately	WMO with Directors NMHSs Directors
Part III. <u>"Internal"</u> 1. Increase efficiency 2. Increase cooperation ~ Share tasks ~ Share technologies ~ Work across NMHSs, countries with the private sector, academia, etc. 3. Consider commercialization.	

Background

Possibilities

1. Technology transfers to developing countries.
2. Partnerships with NMHSs, private sectors and academia.
3. Role of media in really understanding weather issues so they report accurately and NMHSs' have credibility.
4. WMO support elevates status and support for NMHSs.
5. International support for WMO.
6. Commercialization.
7. Public education and understanding.

8. Increase status and visibility of NMHS.
9. Increase efficiency of NMHSs ... better use of technology and decrease/ give up old technologies.
10. Increase cooperation at NMHSs ... sharing of tasks.
11. Weather service must respond to national priorities.
12. We must understand the public's priorities and respond (what they want us to do for them).
13. Increased involvement of meteorologist in politics.
14. Senior-level policy makers to get them involved in WMO/NMHSs' activities. (Who would the press make a "big deal" about?)
15. Leadership of weather services.

Table 4

Additions to the Summary of Issues

1. Change the title to read: The Future of National Meteorological and *Hydro-Meteorological* Services.
2. Change issue number 2 to read: National needs for weather and climate services, *including* extreme events.

Prioritization of Issues (Top 3-5 items after voting)

1. Roles of NMHSs vis-a-vis other service providers. Impacts of commercialization on NMHSs.
2. International responsibilities and obligations.
3. National needs for weather and climate services, including extreme events.
4. Basic functions of NMHSs.

Problem Solving: Roles of NMHS vis a vis other service providers

What/How	Who
<ol style="list-style-type: none"> 1. Basic services - specialized services should help support the basic services. Some countries lack funding for basic services and we need cooperation. 2. Develop a model - generic change management model to cope with all issues, funding demands; and generic legislation model. (Can be used as advice and guidance for each country to use and modify appropriately. Can be used by legal and experienced people to assist countries. 	<ol style="list-style-type: none"> 1. Government 2. WMO

Problem Solving: (Continued)

What/How	Who
3. Invite private sector to participate as a partner in the development of models. 4. Define what problems are facing all of us? Involve private sector in research and development.	3. WMO

Brainstorm

1. Recognize different situations in different parts of the world.
~ Competition for financial resources.
2. Useful model for other countries to see partnership between National Weather Service and private sector with clear rules.
3. NMS should only do basic services (for civil protection). Private sector should provide value-added service and some way pay for basic.
4. In same boat - We have not mastered change management.
~ Create an operational and business model to respond to the world community (change model). Example: in Japan clear division of responsibility between government and private sector (legalized).
5. Find method to secure the funding for basic services (for government).
6. What is the end product, define.
~ Life and property #1.
~ Reduce duplication between public and private - rules for each.
7. Create a mechanism for private sector to participate in WMO (ITU good model).
8. Basic services - depend on other countries, must be provided by government. Private sector should pay for value-added services and help support basic services.
9. Focus on data generation and basic products.
10. NMS - Do provide value-added services. Commercial world better to provide specialized services. Define value-added and specialized or basic/enhanced...
11. Create a "model" legislation that can be modified or customized for each country. As advise and guidance (use legal and experienced people to assist you). Some information sharing about "Modus Apenendi".

Assumptions

1. Less and less funding to meet funding requirements for services.
2. We must create harmony and a foundation for partnership between public and private sectors.
3. Must find a mechanism for national and international cooperation in mutual support of world community.
4. Less and less funding, but we as a community (world public and private community) must do more. We need adequate funding.
5. Through mechanism of market-based economy, we must harmonize our competitiveness to respond to world community.
6. Must find a mechanism for national and international cooperation in a mutual support of each other (especially if developing countries cannot fund services). Respect the sovereignty of each country to manage their change.

Table 5

Additions to the Summary of Issues

10. New players with no background in meteorology, e.g., insurance agents.
11. Changing technology will force us into services. (Vote: 2)
12. Government changes to change their structure will impact NMHS services.
13. Role: Encourage separate and complimentary players. Industry and research. (Vote: 1)

Prioritization of Issues (Top 3-5 items after voting)

1. National needs for weather and climate services, especially for extreme events and the introduction of an observation network.
2. International responsibilities and obligations.
3. Adequate governmental support/funding for NMHSs.
4. External assistance for developing country NMHSs.
5. Technology will force us into services.

Strategy A - WHAT

National Needs for NMHSs

1. Diverse needs across countries.
2. Comprehensive global observing system is essential
3. More and faster information and data and services.
4. Precise, climate data timely, and climate extreme events, e.g., drought.
5. Do not forget Hydrology.

6. Official voice.
7. Users - How to use data and services.
8. Developed countries to assist developing countries.
9. Cooperation among all players and for capacity building.
10. Address environmental issues.

Problem Solving: National needs for weather and climate services.

Strategy B

What/How	Who
<p><u>WHAT:</u> Meet these needs (see above) in an integrated way, adopting strategies to raise all NMHSs across governments, technically and institutionally with all players (publicly, private sector, research and education), raising all relationships. Close the gap among NMHSs.</p> <p><u>HOW:</u> WMO Leadership:</p> <ul style="list-style-type: none"> ~ Agree on state of the art (where we are) ~ Develop statement of goals – world community - and individual NMHSs ~ What are our areas of agreement? ~ Where we disagree and strategy for resolving action plan; split into process (should address processes and who is responsible/accountable for what and by when) and distribution workloads and responsibilities. 	WMO Leadership

Background

Issue Clarity:

1. Speed in the future - must respond quicker. Tremendous growth in need for services - Coping with climate change and application.
2. Need lots of information from developed countries for warning and preparation of extreme events, e.g., El Nino.
3. Turning to customer needs.
4. Climate prediction - politics and industry new element.
5. Growth in expectation of what NMHSs provide. More detail, greater lead time, more accuracy and access.
6. Must not forget the Hydrology. It will drive needs, a connector.
7. More precise local and timely climate information. Industrial users demand this.

8. National needs driven by technology communications - easier to access. Expectations will change the technology. There is a feedback loop.
9. National needs driven by user requirements because they are facing problems.
10. Extreme events and climate events, e.g., drought.
11. One voice in the country.
12. Some users are more knowledgeable and have specialized needs. Other users are not as knowledgeable yet they still have expectations.

How do we approach this as a world community?

1. Keep in mind diversity of needs and capacity building. Different needs from county to country; moment to moment. How to meet these. Sharing is important.
2. Exchange of international data underpins and depends on a comprehensive global observation system. This system is essential for ensuring public/private Met services to meet the 21st century.
3. Need more data and faster.
4. Expand the party - more players; manage in different way.
5. Agree on state of art, goals, where we agree, do not agree and a strategy for reaching agreement and defining who will do what.
6. Provision of assistance from developed countries to developing countries.
7. Begin cooperation - cut down on unhealthy competition. Know how transfer; suffers now under competition; cross feed with diversity.
8. Shared technical infrastructure; support better observation system to meet expectations and delivery of services.
9. Ability to develop services.
10. What can we contribute to environment.

Themes/Strategy

Goal:

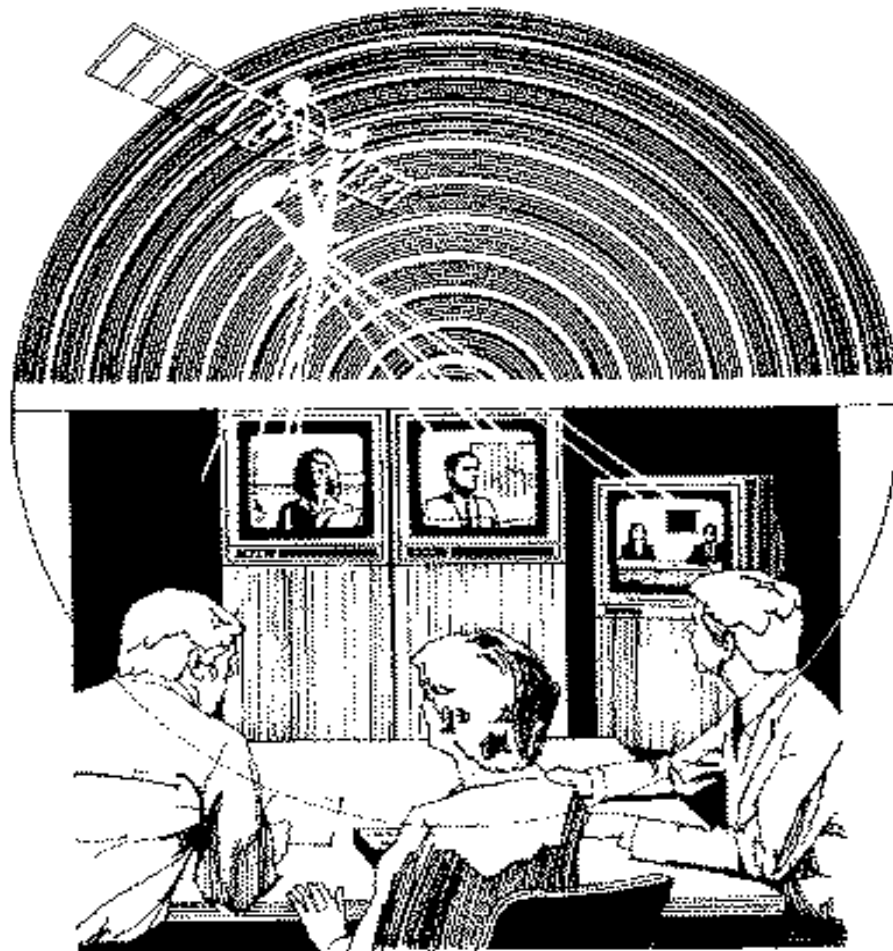
A goal to meet these needs with everyone involved. New type of management on a regional, global level. Global leadership from WMO. Ways how to make gap smaller between developed and developing countries. Two dimensional integration; technology and adopting strategies for raising all relationships. Where we agree, where we do not agree - pull ourselves back; processes - what to do with where we disagree.

Task #2

Address the issues and challenges related to the role of media, private sector, and NMHSs in the provision of weather services



Prioritization Of Issues: Role of the Media and Private Sector



Combined Table Votes: Summary of Priorities

<u>Priority Order</u>		<u>Number of Votes</u>
1.	Cooperation between NMHSs and media/ private sector, especially during emergency situations	11
2.	Provision of accurate and timely official information to the public, especially during emergency situations.	8
3.	Access to accurate and timely information by the media and private sector.	7
4.	Attribution of source of data and information.	6
4.	Competition between NMHSs, the media, and the private sector, both nationally and internationally.	6
5.	Provision of tailored/specialized information and value-added services.	4
6.	Quality of information available.	1

Tie Vote

Summary of Issues Prioritized

Table 1

1. **Cooperation between NMHSs and media/private sector, especially during emergency situations. (Votes: 7)**
2. **Competition between NMHSs, the media, and the private sector, both nationally, and internationally. (Votes: 2)**
3. **Access to accurate and timely information by the media and private sector. (Votes: 3)**
4. **Provision of accurate and timely official information to the public, especially during emergency situations. (Votes: 4)**
5. **Provision of tailored/specialized information and value-added services. (Votes: 3)**
6. **Attribution of source of data and information. (Votes: 4)**
7. **Quality of information available.**

Table 2

1. **Cooperation between NMHSs and media/private sector, especially during emergency situations. (Votes: 4)**
2. **Competition between NMHSs, the media, and the private sector, both nationally and internationally. (Votes: 4)**
3. **Access to accurate and timely information by the media and private sector. (Votes: 4)**
4. **Provision of accurate and timely official information to the public, especially during emergency situations. (Votes: 4)**
5. **Provision of tailored/specialized information and value-added services. (Votes: 1)**
6. **Attribution of source of data and information. (Votes: 2)**
7. **Quality of information available. (Vote: 1)**

The Role of the Media and Private Sector: Top Issues and Proposed Solutions



Task #2:

Address the issues and challenges related to the role of media, private sector, and NMHSs in the provision of weather services.

Table 1

Additions to the Summary of Issues

1. Reluctance of NMHS to work with private sector and vice versa.
2. Issue #1 add: *How to create and enhance* cooperation between...

Prioritization of Issues (Top 3-5 items after voting)

1. How to create and enhance cooperation between NMHSs and media/private sector, especially during emergency situations.
2. Provision of accurate and timely official information to the public, especially during emergency situations. Attribution of source of data and information.
3. Access to accurate and timely information by the media and private sector. Provision of tailored/specialized information and value-added services.
4. Competition between NMHSs, the media, and the private sector, both nationally and internationally.

Problem-Solving: How to create and enhance cooperation between NMHSs and media/private sector.

What/How	Who
1. Improve education training of media, private sector, and vice versa. Training course seminars regional events.	1. WMO, AMS, NMHS, and Private Sector.
2. To improve quality of deliverables, create a certification process/standard (i.e., for weather presenters, etc.) benchmarking.	2. Professional societies, WMO, and Governments.
3. Increase/improve dialogue between NMHS, private sector, and public sector. Seminars, regular scheduled events, and cooperative projects, studies, and exercises.	3. NMHS, Media/Private Sector, Academia, Professional Societies, and Civil Defense Groups.
4. Create process to review evolving roles/responsibilities of NMHS and private sector. Establish Advisory Committee or standing panel.	4. NMHS and Private Sector.

What/How	Who
5. Create positive image of NMHS and media, private sector to public. Media use NMHS personnel as expert of knowledgeable source. Weather service gives presenter credibility.	5. Media
6. Provide good/accurate data to all that require it. International/global availability of warnings.	6. NMHS, Media, and WMO.

Possibilities for Roles

1. What if there is no private sector? What role should government/NMHS take on to do private sector functions?
2. Media broadcast weather warning forecasts to public in emergencies.
3. Media help improve image of NMHS; service provided, awareness.
4. Media be used as a medium for issuing warnings.
5. Media to explain weather events, educate public, and explain phenomena.
6. Media/private sector become open forum for discussing/addressing weather events, opinions and forecasts; balance information to ensure level field.
7. Develop creative methods of financial support to improve infrastructure, personnel, funding, or equipment goes to NMHS.
8. Use, assuming core functions and quality standards and information access are well defined. Provide some or all of the private sector to core functions.
9. Sensitize/educate media as to socio-economic impact and importance of their reporting of NMHS services, warnings, and forecasts.
10. Private sector help define data products and requirements and definitions.
11. Hold media accountable for providing accurate, reliable data – “self regulation”.
12. Have media/private sector help define roles and responsibilities between themselves and NMHS.
13. Private sector/media help set broadcast medium standards.
14. Establish a media/private sector code of ethics.
15. Media help drive/direct/influence government action (i.e., help put systems in place).

16. Provide link between NMHS and emergency services – equipment, information, etc.
17. Provide specialized forecasts for specialized markets.
18. Provide unique display and delivery of services/information.

Assumptions Pertaining to:

1. How to enhance and create cooperation.
 - ~ NMHS and media/private sector do not “talk” to each other.
 - ~ It is well defined already what roles and functions are played NMHS and private sector, but there is duplication/overlap between NMHS and private sector (re: roles and functions).
 - ~ Private sector is not involved in process with NMHS.
 - ~ No legal framework for roles and responsibilities.
2. Common interest in protecting property, saving lives, and clean environment, but also assuming different agendas are evident and may take priority.
3. Variety of experience and credentials/education for those involved in weather services.

Table 2

Additions to the Summary of Issues:

1. Accreditation.
2. No mechanism to make media accountable/responsible for censure.
3. E-mail control mechanism - not just media also providers.

Prioritization of Issues (Top 3-5 items after voting):

1. Cooperation between NMHSs and media/private sector, especially during emergency situations. Competition between NMHSs, the media, and the private sector, both nationally and internationally.
2. Access to accurate and timely information by the media and private sector. Provision of accurate and timely information to public especially during emergency situations.

Issue: Cooperation/competition between NMHS, Media, Private Sector

Assumptions:

1. Media partner to get National Meteorological Service forecast out.
2. Media customer for some countries not a competitor; not a private company.
3. Emergency situations - NMS - single voice/single message policy not law in U.S.
4. If you are a supplier of information and end up competing against customers there is conflict of interests.
5. The bottom line for public sector and private sector different driving factors.
6. Timely and accurate message. This needs fundamental data supplied from National Met Services. Charge or not.
7. Need strong private sector, strong public sector.
8. Weather service industry - large potential.

Problem Solving: Cooperation/competition between NMHS and media/private sector

What/How	Who
<p>Establish better communications between Private Sector to enable cooperation and competition. Each country will do this.</p> <ol style="list-style-type: none">1. National perspective:<ul style="list-style-type: none">~ Round tables at national level - public, private, media2. European or regional perspective for the round table discussion.3. Understand what is happening in other sectors internationally4. Hold conference of private sector/public sector:<ul style="list-style-type: none">~ Examples~ Issues~ SolutionsBroaden participation5. Cosponsor International Workshop IABM and WMO. Establish enhanced public awareness of value of funding infrastructure (Issue: Many places perceived value of weather information)<ul style="list-style-type: none">~ Attribution of sources of data~ Following up with the UN~ Broad base approach	WMO/Congress

<u>What/How</u>	<u>Who</u>
<p>Accept two different philosophies for pricing:</p> <ul style="list-style-type: none"> ~ <u>Clearly define role</u> of NMHS allow NMHS to perform basic function ~ Examine commercial opportunities for performing their basic functions ~ Maximum funding by state ~ Avoid situation where infrastructure becomes dependent on having to sell services <p>How to make, when there is competition, a level playing field:</p> <ul style="list-style-type: none"> ~ No conflict of interests ~ Market base pricing ~ Wholesale/retail ~ Use local sources of data <p>Solution alternative to competition:</p> <ul style="list-style-type: none"> ~ Outsourcing ~ Privatizing certain parts ~ Partnerships 	

Possibilities for tapping Media and Private Sector

Ways That Core and NMHS work with Media and Private Sector

1. Concept of weather coalition (private, public, media, academic - joint ventures) program planning, justification and implementation.
2. Cooperation between weather services TV broadcast media must be defined. Setup: Role of media and private and define.
3. Tapping media, private sector doing as many things as possible:
 - ~ Political reality - if government funded, government needs to be acknowledged; voters see use of tax dollars. Example: Doppler Radar funded by government.
4. Commercialization Partnerships - NMHS and private sector. Provide products or service for a fee.
5. Cooperate with media:
 - ~ We give - we present (NMHS)
 - ~ Meteorologist hired by TV
 - ~ Give it to private weather provider, sells it to TV. (This is currently done)
 - ~ Private sector pick up forecast without knowledge and sells it as their own
4. Code of practice - standards between Met service and appropriate Media body.

5. Attribution: difference between free information and information paid for - value added:
~ Canada - pay for model input.
6. Adequate pricing scheme for relations of Media to Meteorological services
7. Public Interests Partnership (NMS/Private Sector) - warnings.
8. Media and private sector considered separate from service providers.
9. Media - 2 way relationship; requirements of each. Satellite created information outside countries. Satellite at variance with national warnings.
10. We should coordinate warnings for international aviation.
11. Private sectors joint ventures.
12. Level playing ground between international/domestic.
13. Media has access to government information access to private sector information:
~ In Europe not free of charge
~ Free information on Internet
~ Raw data through U.S.
~ No chance in Europe to get free information
~ Will buy observations not other data and dollars; turn to private sector for information
~ We have to budget in media customers.
14. Monopoly.
15. North America - provide for free.
16. Relationship to Media - National Met Services - get reduced data; we keep one station to show best products.
17. Concerted effort to convince government to fund infrastructure.
18. Technology transfer/licensing.
19. Outsourcing National Met functions.
20. Privatization of National Meteorological Service.
21. Advocacy and education - economy sharing - partnerships, alliances have independent economic responsibility - joint venture.

Task #3

Explore the key issues related to the access and exchange of meteorological data and products for research, education, and commercial use



Prioritization Of Issues:

Access and Exchange of Data and Products



Combined Table Votes: Summary of Priorities

<u>Priority Order</u>		<u>Number of Votes</u>
1.	Use of Internet for information access and exchange.	20
2.	Access, availability, and exchange of meteorological and related data and products for disaster mitigation, research and education, and commercial use.	15
3.	Intellectual Property Rights (ownership of data and products).	7
4.	Definition of a value-added product.	6
5.	Data security.	4
6.	Amount and type of data and products exchanges.	3
6.	Costs of data and products.	3

Tie Vote

Summary of Issues Prioritized

Table 3

1. Access, availability, and exchange of meteorological and related data and products for disaster mitigation, research and education, and commercial use.
2. Use of Internet for information access and exchange. (Vote: 7)
3. Amount and type of data and products exchanges.
4. Intellectual Property Rights (ownership of data and products). (Vote: 3)
5. Data security.
6. Costs of data and products. (Vote: 2)
7. Definition of a value-added *and specialized* product. (Vote: 3)

Table 4

1. Access, availability, and exchange of meteorological and related data and products for disaster mitigation, research and education, and commercial use. (Vote: 7)
2. Use of Internet for information access and exchange. (Vote: 4)
3. Amount and type of data and products exchanges. (Vote: 1)
4. Intellectual Property Rights (ownership of data and products). (Vote: 1)
5. Data security. *Data Product and credibility/accountability.* (Vote: 3)
6. Costs of data and products. (Vote: 1)
7. Definition of a value-added *and specialized* product. (*Anything above a core/basic*) (Vote: 3)

Table 5

1. Access, availability, and exchange of meteorological and related data and products for disaster mitigation, research and education, and commercial use. (Vote: 8)
2. Use of Internet for information access and exchange. (Should it be free? Capability sharing and building on international scale. This is related to #4 and #6). (Vote: 9)
3. Amount and type of data and products exchanges. (Vote: 2)
4. Intellectual Property Rights (ownership of data and products). (e.g., forecast on the Internet, who owns it?) (Vote: 3)
5. Data security. (Vote: 1)
6. Costs of data and products.
7. Definition of a value-added.

Access and Exchange of Data and Products:

Top Issues and Proposed Solutions



Task 3:

Explore the key related to the access and exchange of meteorological data and products for research, education, and commercial use

Table 3

Additions to the Summary of Issues

1. Issue #2 add - For what purposes? Costs? Security? Viability? Reliability? Misuse?
2. Add - Who pays? Development of data observing systems, collections, processing, dissemination (end-to-end system). (Votes: 3)
3. Add - Who's responsible for quality control? (Votes: 1)
4. Issue #7 add - Commercialization, and private sector.
5. Add - Who's responsible for impact (ex., issue warning, there is adverse impact...who is responsible?)? (Votes: 1)
6. Add - Preservation and proper implementation of resolution 40. (Votes: 7)

Prioritization of Issues (Top 3-5 items after voting)

1. Use of Internet for information access and exchange? For what purposes? Costs - security? Viability? Reliability? Misuse?
2. Preservation and proper implementation of Resolution 40.
3. Intellectual Property Rights (ownership of data and products).
3. Definition of a value-added product, commercialization, and private sector.
5. Who pays? Development of data, observing systems, collection, processing, dissemination (end-to-end system and each part).

Assumptions

1. We are all aware of contents of WMO-Resolution 40.
2. As Internet evolves, it is harder and harder to supervise/control.
3. The value of meteorological products data will increase over time.
4. The demand for meteorological data will increase over time.
5. Governments are reducing amount of tax \$\$ dedicated to weather operations...cost recovery becomes more important.

Possibilities

1. “GPS Model” - great expense to government(s) to create comprehensive data collection system. Data - free and open to all. Applications anybody...benefits, products/services.

We did not reach agreement on:

- Extent to which GPS model would be realized and when.
- Extent to which GPS model would benefit developing countries.
- Extent to which GPS model would replace existing collection systems.

Real Issue: Polarized Groups

- One Group believes collected data should be made available free of charge.
- One Group believes Resolution 40 allows governments of collected data to place conditions on dissemination/use.

What would it take to bring the world community *together* on the issue?

Brainstorm List of Possibilities

1. Make data “free” for non-profit uses - research, education, warnings, etc.
2. Make data free, competition for products.
3. If governments of world would support infrastructure for collection of data sets without costing meteorological agencies (having to charge for data).
4. WMO-model (consortium for collection).
5. Governments support all costs of infrastructure for meteorological data (no selling required).
6. Government prohibit selling of data.
7. Make progress in partnership with private sector so they contribute to fund some of data collection beyond national borders (“earmark funds”).
8. Recognize private sector contribution (through taxes) to generate fund (they are “paying” to collect data).
9. Private sector pays special international weather tax. Tax go to data collection.
10. Make individual data sets so worthless that no charge products would be worthwhile.

Problem Solving: Use of Internet (did not reach agreement)

What/How	Who
1. 3-4 develop countries jointly support high resolution, high accuracy data sets and make free to all. 2. Develop mechanisms for funding all data collection – IATA \$1/ticket, world bank “grant”, etc.	1. U.S., Australia, Japan, and others. 2. WMO

Table 4

Additions to the Summary of Issues

(For future consideration)

8. Use of Intranet for the exchange and access of information as a replacement of GTS.

Prioritization of Issues (Top 3-5 items after voting)

1. Access, availability, and exchange of meteorological and related data and products for disaster mitigation, research and education, and commercial use.
2. Use of Internet for information access and exchange.
3. Data and product security and credibility/accountability.
4. Definition of a value-added and specialized product. (Anything above a core/basic)

Core Concerns

1. No agreed upon measure of the volume of international data and product exchange.
2. There is a perception of a "great" amount of data not being made freely available to commercial sector.
3. The Internet by itself has increased availability and timeliness of data and no assurance of the quality of that data.
4. That there is an unfair playing field between the private sector and commercial arm of the Met services.
5. The heart of issues are some governments are forcing Met services to recover the costs of providing the data (lose/lose instead of win/win and a misconception of a "total global community")

Basic Assumption

1. We need to recognize that climatological and hydrological data may also be regulated the same way.

Problem Solving: Access, availability and exchange of Met and related data.

What/How	Who
1. We <u>must</u> convince the world community that if we continue the present course of action, that there is a crisis evolving that will: a. Reduce viable NMSs' b. Reduce exchange of Met data and Services c. Endanger population and Economics	WMO
2. Come together as a community to do: ~ Vision building ~ Establish goals ~ Consensus building on alternative action plans	WMO
3. Increase awareness of end users of the true cost of producing the products that they want.	WMO
4. Governments must <u>fully</u> support the NMSs' in partnerships with the private sector: a. Clearly define and recognize public/private roles b. Private sector shares cost, i.e., Taxes, fees, joint global fund	WMO and Governments

Table 5

Additions to the Summary of Issues

1. Data quality.
2. Impacts on developing and developed countries.
 - ~ How to access.
 - ~ Meteorological service – no control; will not be understood; people can misuse information and misrepresent NMHS.
3. Potential effect of Resolution 40 on research and education. If can not use Internet, then data is less available.
4. Use GTS for intranet.

Prioritization of Issues (Top 3-5 Items after voting)

1. Use of internet (free unrestricted) for information access and exchange. (Capability sharing and building on international scale. Related to #4 and #6.
2. Access, availability, and exchange of meteorological and related data and products for disaster mitigation, research and education, commercial use. Related data means hydro, climate, chemistry, and broader system.
3. Impact of Internet on Intellectual Property Rights (ownership of data and products). (e.g., Forecast on Internet – who owns it?)

Problem Solving: Use of Internet

What/How	Who
<u>Strategy 1</u> 1. Continue to build on EU/USA talks. 2. Agree on principles of access for “additional data”. 3. Adopt it as WMO position. 4. A series of pilots shared broadly and back to WMO framework.	WMO EC working group on data exchange
<u>Strategy 2</u> 1. Develop WMO quality label for Internet data. 2. Use GTS standards for issuing label. 3. Assign a symbol.	WMO and CBS
<u>Strategy 3</u> 1. Program of Internet-based technical assistance.	Coordinate through WMO

Clarification of Highest Priority Item

1. We will use Internet.
2. Free unrestricted and 100% safety are two ends of a continuum.
3. This access of data is a societal issue too.
4. Observational data is of value.
5. Ambivalent – these are “+’s” and “-’s” to using the internet.

“Positives” (+)

1. Real time demo of NMHS.
2. Expanded feedback from users about products.
3. Information to educators – schools/universities.
4. Electronic transfer of observations.
5. On demand information forecast.
6. Chance to increase free exchange.

“Negatives” (-)

1. Resources for communication network for developing countries.
2. No NMHS control – single voice. Individual’s morals are used to decide data use.
3. Time consuming – e-mail, update web page, questions come in faster.
4. Requires training.
5. Misuse of information.
6. People do not understand where data comes from. Masks national infrastructure system.

Clarification of Prioritized Issue

1. Unrestricted access nature of data on Internet.
2. Ambivalent new tool – negative impacts.
 - ~ How to minimize these.
 - ~ How to access resources for communications network.
 - ~ No control for NMHS.
 - ~ Training in use.
 - ~ Consume time/e-mail time – update web pages, questions come faster.
 - ~ People can misuse information.
3. Positive impact.
 - ~ Tool to show what we are doing, real time.
 - ~ Communicate and feedback to user, more people, quicker feedback from user on which products are good.
 - ~ Getting information to schools and universities.
 - ~ Outreach tool.
 - ~ Improved mechanism for taking observational.
 - ~ On-demand dissemination weather forecasts.
 - ~ Opportunity for free and open data exchange.
4. Internet is controversial, we are not the only one dealing with this uncertainty (preface). Society is dealing with it too.
5. Up to individual morals, therefore no control.
6. Need rule and regulation, standards, agreements – use GTS standards.
7. Value on observations.

8. There is a value to data, therefore it is restricted.
9. Globalization of data sharing. People do not understand there has to be a system to support it. Internet masks the national systems. Internet is open – different type (GTS is closed). It is a chance and a threat. NMHS blamed for inaccurate/poor forecast.
10. People tend to believe the international media.
11. Is there an idea to go back to GTS only?

Brainstorm of Solutions

1. Negative impacts (re: control) can be addressed. Agree on principles of access and agree on which data is public property.
2. Quality – establish a quality label to label official information. Legal quality mark of NMHS.
3. Clear definition of what data will be exchanged; what kinds of data.
4. International cooperation for technical assistance and educational assistance.
5. Upper air data – wrap around globe – is global. Global system can accept data from any one point. Input can be put in at the point where it is. Collection of observation raw data-processed data distributes.
6. A means to protect copyright.
7. Music industry as an example – pay fee each time music is played to support producers. They are trying to do this on Internet. We need to define who pays to keep infrastructure going.
8. Improve GTS as Intranet.
9. Improve GTS using (TCPIP) Internet technology for an Intranet.
10. Using Internet as an open system or combination.

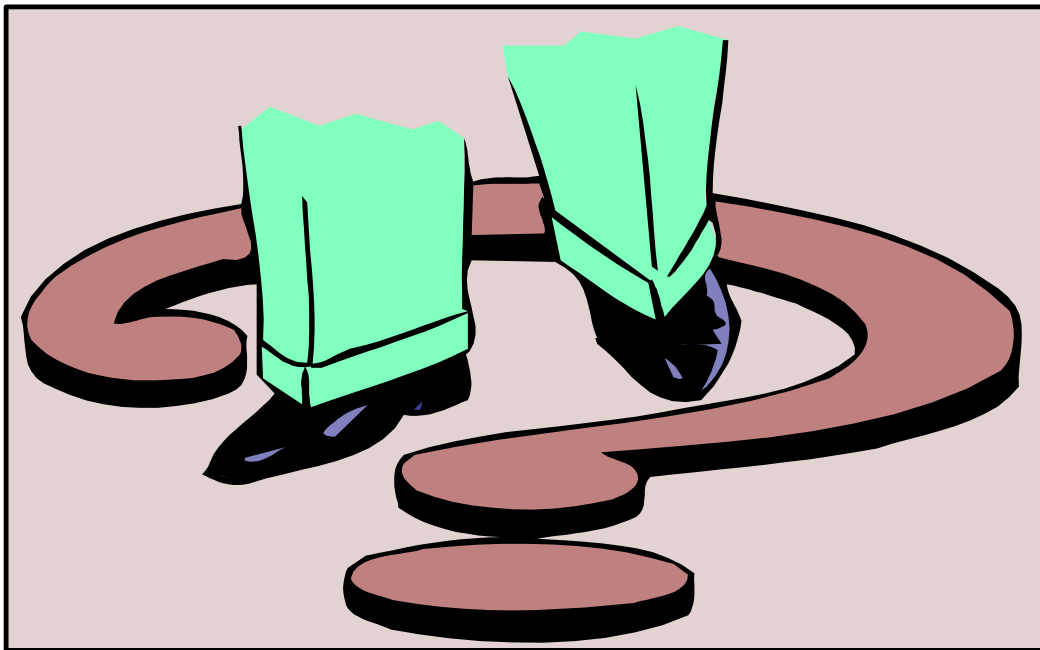
Task #4

Proposed Next Steps:

“NO GO” Items
and Editorial Feedback



Edited Version of Proposed Next Steps



Saturday evening, January 9th, the Consultant and NOAA Staff team compiled an integrated version of all table inputs for potential next steps. Based on the feedback provided by participants on Sunday, January 10th, the original proposed next steps package (Appendix B) has been modified to reflect feedback and editorial comments. Pages 42-48 reflect the edited version of the package

Operating Principles

1. **We are in an environment which continues to demand that we all do “more with less”.**
2. **Weather and climate issues continue to be increasingly visible, vital and hence, an important concern for society.**
3. **We are interdependent, we need each other for overall system viability and success (public, private, academia).**
4. **Participation by all members of the global community is critical.**
5. **We acknowledge and recognize the value of each partner’s contribution to the socio-economic well being of society.**
6. **Enhancing the visibility, status, and capability of NMHSs and informing the public decision-makers will help promote advocacy and funding.**
7. **We must account for competition and cooperation in our interactions and processes.**
8. **We must be adaptable to changing conditions, needs, and requirements.**
9. **Ongoing and open dialog, learning and exchange of ideas are essential to our community interaction and future development.**
10. **We all contribute to the socio-economic well-being of society.**

Definition of Terms

- ☐ **Privatization**
- ☐ **Commercialization**
- ☐ **User**
- ☐ **Partnership**
- ☐ **Attribution**
- ☐ **Level playing field**
- ☐ **Single official voice**
- ☐ **Mitigation**
- ☐ **“Core” or basic functions**
- ☐ **Value-added or specialized services**
- ☐ **Related data**

Community Agenda

Agenda reflect edits and changes made during the final plenary session where objections and “no-go” items were raised and are included in their entirety in an unabridged report.

Sponsoring Body	Roles and Authorities
1. To be determined	Assess national and international weather needs and goals and identify problems.
2. To be determined	Define core/basic NMHS requirements and funded functions.
3. To be determined	Collaboratively agree with all key players on roles/activities for other than core/basic requirements at national and international levels - NMHSs, private, media, academia, and others.
4. WMO	Share change management policies and legal frameworks to assist countries to develop their own policies.
5. To be determined	Periodically review evolving roles and responsibilities.

Sponsoring Body	Partnerships
6. To be determined	Review, propose and refine operating principles and define standard terminology from Dallas Workshop.
7. WMO	Assist developing countries to improve their meteorological and hydrometeorological services.
8. WMO	Create Internet-based technical assistance and education programs.
9. WMO and NMHSs	Invite representatives of the private sector, media, and academia to participate in WMO/NMHSs events and activities (ongoing model of collaboration) and vice-versa.
10. WMO and NMHSs	Invite high-level decision-makers to participate in WMO/NMHSs events/activities (build advocacy at senior levels).
11. To be determined	Propose a process to identify and resolve disagreements.

Community Agenda (cont'd)

Sponsoring Body	Funding
12. To be determined	Attempt to examine the costs and benefits of core and value-added weather services and research of NMHSs. Promote value of NMHSs within each country..
13. To be determined	Identify innovative funding strategies for NMHSs weather services, data collection and products.
14. To be determined	Further develop funding support for NMHSs developing countries.
15.. To be determined	Develop vision and strategy to reconcile philosophical differences (re: funding infrastructure for weather services).

Sponsoring Body	Education and Awareness
16. To be determined	Inform all public and private decision-makers (public, users, media, and academia) of the costs/benefits of core and value-added weather services and products.
17. WMO	Inform all key players about the difficulties of continuing the way we do “business as usual” (degrading infrastructure).
18. WMO	Enhance and promote education program for meteorological and hydrometeorological science.
19. Media (IABM) and Private Sector	Establish protocol, implemented by the media and private sector, to attribute data source to increase public awareness of NMHSs.
20. To be determined	Explore standards for weather-related personnel.
21. To be determined	Explore code of ethics for use of data and products in public/private sector.

Sponsoring Body	Data, Products, and Technology
22. WMO	Establish quality assurance mechanisms for data and services (e.g., quality label).
23. To be determined	Identify and promote new technologies.
24. WMO EC AGE Private Sector and Media	Present proposals for agreement on application of principles contained in Resolution 40 with respect to Internet access for additional data.

Model for Managing Meteorological and Hydrological Cooperation

- External Factors (e.g., political/economic factors, technology, etc.)
- All Participants Needs
- Legislative Mandates

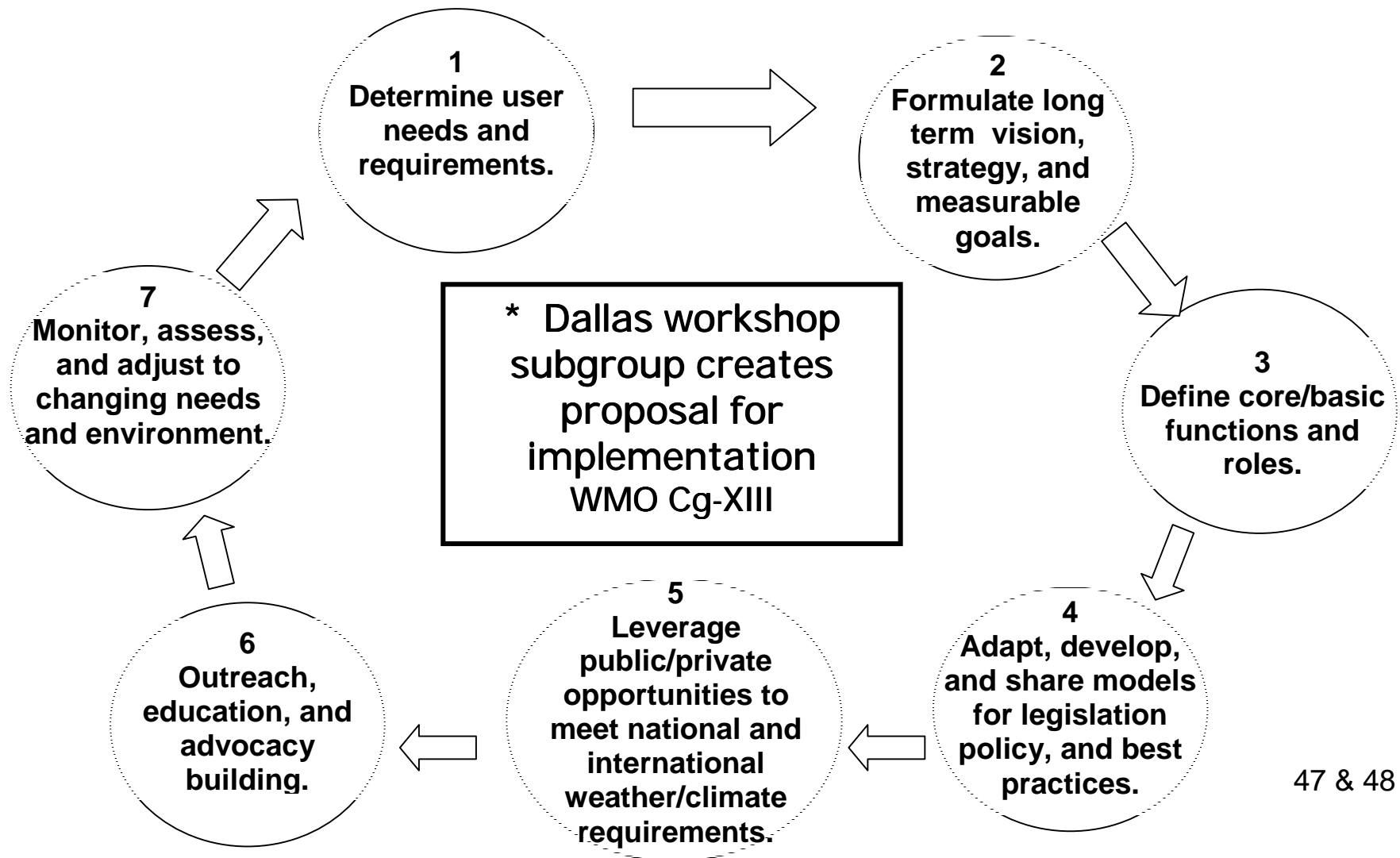


Table Feedback



Task #4

**Consider a next steps approach
as a world community to
address the items we explored
in Tasks #1-3.**

I. Operating Principles - Feedback

Table 1

- 1. Level playing field piece – implies that those in system may be a “threat”/can not be trusted to do the right thing.**
- 2. Weather is highly visible - #2 adds no value; obvious.**
- 3. #2 - Weather remains an important concern for society.**
- 4. #2 – Something behind the “weather” should be more clear.**
- 5. #3 - “Level playing field” means different things to different people.**
- 6. #4 - Delete “education”**
- 7. #8 - Obvious – do we need it? Reword?**

Table 2

- 1. Issue 2: Oversimplification weather – Should say: Climate vital and highly visible and hence essential service.**
- 2. Issue 3: “level playing field” misinterpreted – Should be: Broken down into 3 items.**
- 3. Issue 4: Delete “and education” – Should say: Education = capacity. Also add: commercialization (no go reactions).**
- 4. #5: It is country specific – “is as real” – Should say: We must account for competition and cooperation.**

Table 3

- 1. Add “Exchange of Ideas”.**

Table 4

1. **#4 – Change “Enhancing the visibility, status of NMHSs and educating the public and decision makers will promote advocacy and funding. Must be more explicit in implying partnership in our operating principles.**

II. Definitions - Feedback

Table 1

1. **Add: Dissemination of information/data availability. Costs/benefits.**
2. **Words infer a generic, not too specific definition of “level playing field” that is acceptable to different readers.**

Table 3

1. **Add NCB**

III. Action Plan - Feedback

Table 1

1. **#2 - Change government to NMHS**
2. **#6 - Change “adopt” to “Review and propose or assess, adapt and adopt”.**
3. **#9 - Add vice-versa at end, or include private sector, media and academia as sponsoring bodies.**
4. **#12 - Reword – Research and/or define costs and benefits.**
5. **#16 - Inform all public and private decision makers.**
6. **#17 - Use “inform” – state in positive, not negative.**
7. **#18 - Enhance and promote, rather than improve.**
8. **#19 - Sponsoring body – NCB perhaps with IABM.**
9. **#23 - Identify new technologies and methods to leverage.**
10. **Add to “Definition of Terms” – Private Sector.**
11. **Action Plan 2 – reword to “Define core/basic ‘minimum’ government – funded functions (NMHS).**
12. **Action Plan 6 – reword to “Review and adopt operating principles ...”**

13. Action Plan 9 – should incorporate the concept of WMO in their Events, etc. – two way street.
14. Action Plan 12 – It is probably impossible to define time benefits – maybe “attempt to” or something.
15. Action Plan 13 – innovative funding strategies should cover data collection activities as well as “services”.
16. Action Plan 19 – Establishing the protocol should be done by the NCB, implementation by the private sector and the media.
17. Action Plan 23 – a “GPS like model” is not a new technology. Perhaps Reward to “Identify and promote opportunities to leverage new technologies”.
18. #9 - Clarify the invitees regarding the “private sector, media and academia”; otherwise there will be so many people to participate the RA sessions and CBS, etc. There should be a representative body of the private sectors and the final decision should be made by WMO.
19. #16 - Put “public” before “private”.
20. #2 - “Government” is a NO GO (NCB cannot define government needs/requirements).
21. #16 - “Educate” is not a good word – please “inform” or other choice.
22. #17 - Same as #16 above.
23. Partnerships:
 - #6 Edit “Adopt operating principles from Dallas workshop and define standard terminology from Dallas workshop”. (No edit given)
 - #9 Edit. (No edit given)
24. Funding:
 - #12 Edit “true”. (No edit given)
 - #14 Change to “Identify funding support for Met services developing countries”.
25. Education and Awareness:
 - #16 Change to “Informs all private and public decision-makers (public, users, media, and academia) of the true costs/benefits of core and value-added weather services products”.
 - #17 Change to “Inform all key players about the risks of continuing the ‘we do ‘business as usual’ (degrading infrastructure)”.
 - #18 Change to “Enhance education programs for meteorological and hydrological science”.
 - #19 Under Sponsoring Body – add NCB
 - #23 Change to “Identify and new technologies”.

Table 2

1. **Roles and Authorities**
 - General NCB – needs to be defined or a collaborative body (bodies)
 - Issue 1: Reinventing the wheel – Should say: Find what problems are.
 - Issue 2: Nobody can tell us what we have to do.
 - Issue 3: Do not know what is required “This process an issue”.
2. **Table-wide:** Objection to sponsoring body and a new body.
Should say: A committee under the umbrella of WMO.
3. **Partnerships**
 - Issue 6: Want to know more; see final data (consider versus adopt)
 - Issue 10: Opposed
4. **Funding**
 - Issue 12: Work against partnerships – Should say: (1) Promote value of NMHS within each country; (2) Benefits.
 - Issue 15: Define “true” – Should say: Funding included.
5. **Education and Awareness**
 - Issue 17: Greater risks to changes than to “business as usual” – Should say: Risk as substitute for difficulties.
 - Issue 21: Should say: Data and products.
 - Issue 24: Resolution 40 done without consultation – Should say: review applications. Should say: achieve agreements.

Table 3

1. **Issue 3:** Change sponsoring body to “Individual countries”.
2. **Issue 12:** Change “Define true” to “Examine”
3. **Issue 20:** Split 5/5 vole ... concerns about who is covered, how to manage, abuse, etc.
4. **Issue 21:** One person – no go.
5. **Issue 23:** Delete “and leverage” and delete examples.
6. **Issue 24:** Change to “present proposal for agreement”; edit WMO/ECAGE.

Table 4

1. **#4 - Share generic change management policies and legal framework models (drop “guide” – too strong) to assist countries in development of their own policies (drop mandate).**
2. **#6 - (Drop “adopt of principles) – keep define standard terminology.**
3. **#11 - Propose a process – (drop “concrete actions, etc.”)**
4. **#12 - Add of the NMHS’s.**
5. **#15 - Move out of funding; put under Roles and Authorities.**
6. **#18 - Change to meteorological and hydro-meteorology science.**
7. **#14 - “Further develop” funding support for developing countries.**

Table 5

1. **#2 - “Minimum” makes it a “no go”. It may limit us. Our mandates are so different – hard to do this. Take out “minimum”; use “agree” not “define”.**
2. **#4 - Suggests there is already agreement; that there is only one model to work from. Private sector should be sponsor. Drop out “generic”. If it is a best practice sharing then it is okay.**
3. **#6 - “Adopt” to “refine”. NCB does not exist – how can it “adopt” anything?**
4. **#7 - Sponsor needs to change. WMO/developed countries/other institutions (Bilateral and multi-lateral assistance).**
5. **#12 - This is a major research program. What do we mean by this? “Define” is very big – will cost lots of money. Studies to be done on this in a coordinated way, is more doable. Foster, communicate, rather than define. Everybody needs to be involved with this.**
6. **#20 - Certification program is very complicated. Unrealistic one you get international agreement.**
7. **#22 - Just have “WMO” as sponsoring body.**
8. **#23 - Sponsoring should be WMO; continue to do this.**
9. **#24 - Sponsoring body needs to include private sector, academia. Tenets of Resolution 40 was not agreed to by the larger community. Take out “application”.**

IV. Model for Managing Cooperation - Feedback

Table 1

1. Reference Chart “Model for Managing Meteorological and Hydrological Cooperation” **Change Title to “Model for Managing Cooperation in Meteorological and Hydrological Activities”**. Also, go through NMH first to presenting to WMO.

Table 3

1. Edit middle box...”Proposals for consideration by CG-Xiii”.

Table 4

1. Reverse bubble 5 and 6, put 6 before 5.

Task #5: Closure Table Remarks



The major thing that I learned and will leave with today is...

Table 1

1. Emotional dialogue with different philosophies (points of view) do not allow ability to agree. An interested neutral party can identify areas of agreement.
2. Collaboration between stakeholders is important.
3. New manner of managing workshop is impressive.
4. An increased understanding of the way other members of the sector operate.
5. Objective, mutually respectful exchange of ideas that may lead to constructive forum.
6. Need to enhance cooperation between the NMHSs' and the private sector.
7. Decision making without structure leads to confusion, lack of information, misinterpretation of "total picture" and breeds poor decisions. Collaboration and cooperation is essential in overcoming these shortcomings, especially in a global environment.
8. That the private sector wish in a constructive way to be more than just value adders.
9. We must talk to each other to create a mutual system or model to cooperate and collaborate.

Table 2

1. The reluctance of people to commit to action.
2. Communication within the still very different participants in weather world has come a small step farther.
3. The value of improving consultation among the public/private, academic sectors.
4. Significant disagreement continues to exist regarding specific roles and how each group should fill these roles.
5. There are many aspects and different approaches of the problems addressed at the workshop.
6. We still have many problems to solve.
7. The need for more open-minded communications ad collaboration between the players.
8. The subject is complex; solutions are possible if one is willing to cooperate and adjust.

Table 3

1. Resolution 40 is not accepted by all sectors in Met Community.
2. We have to work towards one major goal ... to achieve this we have to separate minor issues from major issues.
3. There is movement in the international Met community toward recognition and inclusion of academia and private sector in formulating operational policies.
4. The need for close cooperation between public and private sectors and academia to address issues/challengers for Met community.
5. Enthusiasm and commitment of all ... in promoting and enhancing Meteorological Service and Met profession.
6. There is a common understanding of the challenges we face.
7. Expanding recognition of commercial WX industry as presence world-wide but wide diversity of views as to it's relationship with NMHSs.
8. There is greater agreement among NMHS, academia and private sector than I thought on wide variety of WX-related issues.
9. Pressure of private company is greater than I thought ... future of NMHSs has changed into greater cooperation between NMHS and private sectors.

Table 4

1. Many nice and good people who are willing to share the destiny of this community.
2. Development partnerships is absolutely important.
3. Still a long way to go before we have partnership and collaborative relations but there is good will and great interest.
4. Value to be together (Met) for options and constructive discussion on future of meteorology.
5. Resolution 40 was meant to resolve these problems, but the real resolution is a collaborate role between WMO, national centers and private sectors.
6. Private sector wishes to cooperate with NMHSs' and recognizes the leading role of WMO.
7. The most important requirement to develop an effective public/private sector partnership and to provide Met services is adequate funding for NMHSs.

Table 5

1. This was a first time for me to follow program solving and it was very effective.
2. There remains personality held difference of opinion on principles of data access.
3. I had significant common ground with my private sector and media colleagues.
4. Outstanding value of consultation among different players.
5. I have to change my way of working and my organization also has to change. The future world of meteorology is very competitive.
6. Changes in technology are changing the terms of the debate.

One-line remark that reflects closure for you
at the end of this 1 ½ day world
community workshop.

Table 1

1. Enlightening.
2. This process needs to evolve to the next step if “global warming” is to take place.
3. One step in a long process.
4. Workshops like this help us to understand, clarify others needs as well as our own.
5. New insights into feelings behind different new points.
6. It was worth my attending this workshop.
7. A good way for exchanging points of view and ideas.
8. Sets ground for constructive dialogue and integration between public and private sectors.

Table 2

1. The players must work effectively together to deliver the best services to the nations citizenry.
2. Need many other steps and actions to improve communication to finally understand each other and achieve satisfying results.
3. Increasing technological, political and economic change means that NMHS and WMO need to be more responsive, adaptable and flexible in particular in relations with the private sector.
4. Much work still to be done.
5. Problem of finding consensus originates from two models of funding NMHS.
6. The future must be built on partnerships.
7. Problem is global and national solutions must also take into account global solutions. There is always a solution.
8. All different parties; periodic brainstorming sessions are needed to tackle this evolving subjects.

Table 3

1. Very interesting and very frustrating!
2. Very interesting experience for me!
3. We have to set benchmarks and evaluate results in the future!
4. A good start toward including a broader body of Met community and expertise.
5. We learned more about strategic planning process in addressing issues and challenges of Met community.
6. Educational!
7. More work together needed to accomplish the goals.
8. Dialogue excellent, proposed action items unrealistic.
9. How sensitive private sector groups are to data exchange issues was well brought out by this workshop.

Table 4

1. Very useful discussions and exchange of opinions.
2. We as a cooperative group need to take control of the situation for all of our best interests.
3. Same as ... Resolution 40 meant to resolve but resolution is our collaboration.
4. Need to increase work and efforts and increase understanding of needs and possibilities of each perspective.
5. National Met Services of developing countries is much more vulnerable in this changing environment and needs special action plans to protect their sustainability.
6. United, there is little we can not do. Divided, there is little we can do.
7. We must all work constructively to develop a partnership based on mutual understanding of each other's requirements and external drivers.
8. New Collaborative Body – Confusing – what we are saying is we need an “Adhoc Taskforce” to explore roles/functions.

Table 5

1. We must exploit positive feedback mechanisms among user expectations, advancing technology, education and research and improve forecasts and services.
2. Despite the size of tasks in front of us, the energy, ideas and dedication of participants will help me keep the dogs of frustration and irritation at bay.
3. This meeting requires follow-up action at all levels.
4. The real world is more than science. We have to work for the users.
5. We will not realize our opportunities until we can agree on respective roles and responsibilities of all stakeholders.

Additional Comments and Parking Lot Items



Additional Comments

Table 1

1. **Reference Operating Principles:**
 - #2 Weather remains an important concern for society.
 - #3 “Level playing field” means different things to different people.
 - #4 Delete “education”
 - #8 Obvious – do we need it? Reword?
2. **Reference Definition of Terms:**
 - Add: Dissemination of information/data availability.
 - Costs/Benefits
3. **Reference Action Plan:**
 - #2 Change government to NMHS
 - #6 Change “adopt” to “Review and propose or assess, adapt and adopt”.
 - #9 Add vice-versa at end, or include private sector, media and academia as sponsoring bodies.
 - #12 Reword – Research and/or define costs and benefits.
 - #16 Inform all public and private decision makers.
 - #17 Use “inform” – state in positive, not negative.
 - #18 Enhance and promote, rather than improve.
 - #19 Sponsoring body – NCB perhaps with IABM.
 - #23 Identify new technologies and methods to leverage.
4. Add to “Definition of Terms” – Private Sector.
5. Action Plan 2 – reword to “Define core/basic ‘minimum’ government – funded functions (NMHS).
6. Action Plan 6 – reword to “Review and adopt operating principles ...”
7. Action Plan 9 – should incorporate the concept of WMO in their Events, etc. – two way street.
8. Action Plan 12 – It is probably impossible to define time benefits – maybe “attempt to” or something.
9. Action Plan 13 – innovative funding strategies should cover data collection activities as well as “services”.
10. Action Plan 19 – Establishing the protocol should be done by the NCB, implementation by the private sector and the media.
11. Action Plan 23 – a “GPS like model” is not a new technology. Perhaps reword to “Identify and promote opportunities to leverage new technologies”.

12. **Reference Action Plan:**
 - #9 Clarify the invitees regarding the “private sector, media and academia”; otherwise there will be so many people to participate the RA sessions and CBS, etc. There should be a representative body of the private sectors and the final decision should be made by WMO.
 - #16 Put “public” before “private”.
13. **Reference Operating Principles:**
 - #2 Something behind the “weather” should be more clear.
14. **Reference Definition of Terms:**

Words infer a generic, not too specific definition of “level playing field” that be acceptable to different reader.
15. **Reference Action Plan:**
 - #2 “Government” is a **NO GO** (NCB cannot define government needs/requirements).
 - #16 “Educate” **is not** a good word – please “inform” or other choice.
 - #17 Same as #16 above.
16. **Reference Chart “Model for Managing Meteorological and Hydrological Cooperation”**

Change Title to “Model for Managing Cooperation in Meteorological and Hydrological Activities”. Also, go through NMH first before presenting to WMO.
17. **Reference Action Plan**

Partnerships:

 - #6 Edit “Adopt operating principles from Dallas workshop and define standard terminology from Dallas workshop”. (No edit given)
 - #9 Edit. (No edit given)

Funding:

 - #12 Edit “true”. (No edit given)
 - #14 Change to “Identify funding support for Met services developing countries”.

Education and Awareness:

 - #16 Change to “Informs all private and public decision-makers (public, users, media, and academia) of the true costs/benefits of core and value-added weather services products”.
 - #17 Change to “Inform all key players about the risks of continuing the ‘we do ‘business as usual’ (degrading infrastructure)”.
 - #18 Change to “Enhance education programs for meteorological and hydrological science”.
 - #19 Under Sponsoring Body – add NCB
 - #23 Change to “Identify and new technologies”.

Table 2

1. Different countries have their own specific economic social/political conditions and level of diversity should be recognized and respected while formulating global policy.

Table 3

No Comments Submitted

Table 4

No Comments Submitted

Table 5

1. Thanks to all Facilitators. Good Job! Special thanks to Philip.

Audience

1. Conflict of interest is something to be managed not avoided.
2. 2 fundamental systems of pricing U.S./Europe.
3. Is free an option in the level playing field?
4. We need to first decide what services the public will provide – then determine what's needed.

Parking Lot

Table 2

1. State Meteorological Services not quite fair competition.
2. How to involve private sector in inter/out meeting (e.g., WMO).
3. Military and legal reasons for NMHS to be government organized.

Table 3

1. Should WMO change to include representation from private sector/academia?

Table 5

1. Need to define “related data” from issue #1. It could mean hydrology, climate, chemistry, and a broader system. What other examples should we consider – like water and air quality. What observational network is needed for public good.

Workshop Evaluations



Summary of Ratings: Combined Table Responses

Total Submittals: 38

1. Overall satisfaction

1	2 (3)	3 (4)	3.5 (1)	4 (23)	4.5 (1)	5 (6)
Highly Dissatisfied						Highly Satisfied

**Average satisfaction rating: (35/38) 92% = 3 or higher
78% = 4 or higher**

2. Workshop Format

1 (2)	2 (2)	3 (8)	3.5 (2)	4 (17)	4.5 (2)	5 (7)
Highly Dissatisfied						Highly Satisfied

**Average satisfaction rating: (36/38) 94% = 3 or higher
68% = 4 or higher**

3. Overall Results

1	2 (4)	3 (6)	3.5 (1)	4 (18)	4.5 (3)	5 (6)
Highly Dissatisfied						Highly Satisfied

**Average satisfaction rating: (34/38) 89% = 3 or higher
71% = 4 or higher**

Table Evaluations

Table 1

No. of Submittals: (8)

1. Overall satisfaction with achievement of workshop goals:

1	2 (1)	3	4 (4)	4.5 (1)	5 (2)
Highly Dissatisfied					Highly Satisfied

Why? Comments?

1. It is a good way for exchanging views and ideas. More should be done to achieve the goals.
2. Managed to structure the problem and begin the process. This was much more productive than previous workshops.
3. Need insight into future of NMHS, collaboration, etc.
4. I learned a lot from the other participants.
5. Highest mark – at least at the level of the table in which I participated.
6. Happy with the process, only a bit frustrated by the process.
- 7.&8. No comment.

2. Satisfaction with workshop format:

1	2	3 (1)	4 (6)	5 (1)
Highly Dissatisfied				Highly Satisfied

Why? Comments?

1. I think that there was some excess from the facilitators (I mean all) to explain and to summarize what it was supposed to be our duties
2. Would have preferred to spend longer at tables on each issue hearing more about their concerns and issues rather than jumping almost immediately to solutions of ill-defined problems. Workshop process a bit confused at our table.
3. The format provides a friendly atmosphere.
4. At time it was confusing (to both the participants and the facilitators) and did not lend itself to inter-group discussion, but it worked out at the end.
5. The process itself is educational.

6. Everyone put forward their views and were listened to.

7. Would have enjoyed more integration with the other tables (participants) at the same time.

8. Facilitator (Table 1) needed to be a bit more forceful.

3. Satisfaction with results of the 1 ½ day collaborative effort:

1	2	3 (2)	4 (2)	4.5 (2)	5 (2)
Highly Dissatisfied					Highly Satisfied

Why? Comments?

1. I was impressed that the facilitators could distill so much apparent wisdom and useful actions from somewhat disjointed and disparate contributions and summaries.
2. It is just the beginning for such important issues.
3. We finally have the beginning of a process that needs to be nurtured and developed. Let's take it to the next level.
4. Candid.
5. Further clarification on access and exchange of data/information still required.
6. Very impressed with the work/time efficiency ratio. I admit that I felt rather tired during the last hour of the 1st day.
7. Finally some movement – concrete steps!
8. No Comment.

4. Other Comments or Suggestions?

1. Appreciation to NWS for testing and organizing this useful forward step in public/private collaboration for better global weather services.
2. I think that a complementary workshop would be wise to consolidate what we have done in these 1 ½ days. Congratulation to the organizers and facilitators. In passing, perhaps a brief example on the way of working at the beginning could have save some time.
3. The staff was well briefed, efficient and professional. Many Kudos to Lynne for pulling this off.
4. This is a simple process to a complicated problem.
5. Workshop means a step forward.
6. Thank you for the possibility of participating.
- 7.&8. No Comment.

Table 2

No. of Submittals: (8)

1. Overall satisfaction with achievement of workshop goals:

1	2 (1)	3(2)	4 (4)	5 (1)
Highly Dissatisfied				Highly Satisfied

Why? Comments?

1. High mark. Since the workshop brought together different players in this complex and to formulate joint views and understand each other better.
2. Participants needed to have higher knowledge of all aspects of the use of Resolution 40 prior to the workshop.
3. Good exchange of views and discussions.
4. Subject is very complex. Process of understanding has just begun.
5. Views candidly shared; disagreements presented.
6. Did not adequately address specific issues related to Goal C!
- 7&8. No Comment.

2. Satisfaction with workshop format:

1	2 (1)	3 (2)	4 (4)	5 (1)
Highly Dissatisfied				Highly Satisfied

Why? Comments?

1. It enabled focused, intensive and serious discussion in an atmosphere of informality.
2. The organization of the workshop (with tables, etc.) was very new for me and very efficient.
3. Format tends to inhibit discussion.
4. The first workshop, with a professional guidance which forces us to certain results and not only exchange views!
5. Reasonables, but the range of issues did not permit full expansion of ideas. Process got in the way of substance frequently.

6. Insufficient time to cover the numerous areas of discussion. Process seemed, in many cases, more important than issues and discussions.
- 7&8. No Comment.

3. Satisfaction with results of the 1 ½ day collaborative effort:

1	2 (1)	3 (1)	3.5 (1)	4 (4)	5 (1)
Highly Dissatisfied					Highly Satisfied

Why? Comments?

1. Well organized.
2. Complexity of the group would not allow us to achieve better results.
3. Some actions carried forward. Prospect marginal for truly significant outcome.
4. Workshop was a significant part of the discussion process. Provided a venue to hear other opinions and to share ideas.
5. Uncertain as to where this process will take us.
- 6.-8. No Comment.

4. Other Comments or Suggestions?

1. Arrangement was excellent. Thanks to NWS and the people (including consultants) who worked for this event and excellent hospitality.
2. It was very difficult to find a consensus among participants from so many different fields. On the other hand it was very useful just to hear opinions of other participants.
3. This has been the best basis to discuss the various problems which are universal in the weather community. This type of conference if exercised more frequently with the variety of the responsible people could lead to respectable results!
4. I have worked this issue for the better part of 12 years. You did about as good as could be expected!
5. No benefit or little benefit from the workshop unless specific action items are actually addressed and steps taken to complete at least some of the items.
6. Could have used more time.
- 7.&8. No Comment

Table 3

No. of Submittals: (8)

1. Overall satisfaction with achievement of workshop goals:

1	2 (1)	3	4 (5)	5 (2)
Highly Dissatisfied				Highly Satisfied

Why? Comments?

- 1. Discussions were candid and relatively unrestraining.**
- 2. Most of the goals listed above (listed on Evaluation) have been achieved.**
- 3. Excellent interaction between participants. Wide variety of views.**

2. Satisfaction with workshop format:

1	2 (1)	3 (1)	4 (2)	5 (4)
Highly Dissatisfied				Highly Satisfied

Why? Comments?

- 1. Well managed and implemented by competent professionals.**
- 2. Too short, too private, concerns minded and too unrealistic.
But anyway, interesting and very much acknowledging.**
- 3. The format of the workshop was a new experience for me and I enjoyed it.**
- 4. Excellent structure. The work of the facilitators was excellent.**
- 5. Breaking into small groups alternating with plenary sessions was effective. Pre-assignment of working groups was good.**

3. Satisfaction with results of the 1 ½ day collaborative effort:

1	2 (2)	3 (2)	4 (3)	4.5(1)	5
Highly Dissatisfied					Highly Satisfied

Why? Comments?

1. Well, you can't be perfect!
2. Too unrealistic; too much pre-oriented areas.
3. Facilitators did excellently well to put complex and scientific discussions in ordered conclusions and recommendations in a very limited time.
4. The results are not based on wide consensus.
- 5.-8. No Comment.

4. Other Comments or Suggestions?

1. The unbiased approach of using professional facilitators greatly enhances the chance for a successful workshop.
2. To focus dialogue aiming not to force NMS in a closed direction but convinced them and be more sensitive to their constituents.
3. Thanks to the facilitators.
4. Organizing similar workshops to address other problem areas faced by the meteorological community.
- 5.-8. No Comment.

Table 4

No. of Submittals: (7)

1. Overall satisfaction with achievement of workshop goals:

1	2	3 (2)	4 (5)	5
Highly Dissatisfied				Highly Satisfied

Why? Comments?

1. We can do more but we have made some progress.
2. There was inadequate time to discuss the proposals to achieve the goals.
3. Made a start to develop a understanding between private and public sectors to build partnerships.
4. No discussion of the use of development for exchange of additional data and products.
5. I understand there is always a time constraint issue. Given this time we did a lot. Given more time we would have got to highly satisfied (5).
6. The workshop is likely to initiate a process which may lead to a better understanding a collaboration between public and private service which is crucial to the future of NMHSs.
7. No. Comment.

2. Satisfaction with workshop format:

1	2	3 (2)	3.5 (1)	4 (3)	5 (1)
Highly Dissatisfied					Highly Satisfied

Why? Comments?

1. Professional topic like this needs good preparation of participants.
2. The format does allow for good mini discussions but did not allow sufficient time for plenary discussion.
3. Very professional.
4. Short time.
5. Format was fine. Presentation of each group's information could have been better ... but this was a large group for the time allotted.

6. It provided an excellent ground for open discussion as well as for finding common grounds and identify ways for action.
7. No Comment.

3. Satisfaction with results of the 1 ½ day collaborative effort:

1	2	3 (1)	4 (4)	5 (2)
Highly Dissatisfied				Highly Satisfied

Why? Comments?

1. The group has been open-minded and made a good effort with some high level of integrity.
2. I was hopeful that a clear set of actions aimed at consensus building would emerge. The “Action Plan” is merely a first step.
3. Solutions of problems facing NMHS is of the utmost importance and this is one way of addressing it.
4. Satisfaction is measured as (1) It was a good use of my time; (2) I would do it again.
5. Provided the short time and the complex matters under consideration, I found the results highly satisfactory.
- 6.&7. No Comment.

4. Other Comments or Suggestions?

1. It is important to have some previous experience for this type of work.
2. Needs wider representations in future force.
4. Should be allowed a little more time, maybe 2 days in order to allow more or deeper discussions on key issues identified by the tables. For the facilitators: make efforts to avoid the use of local or very specific expressions because it makes it difficult for non-native English speaking persons to understand fully the terms of the discussions.
- 5.-7. No Comment.

Table 5

No. of Submittals: (7)

1. Overall satisfaction with achievement of workshop goals:

1	2	3	3.5 (1)	4 (5)	5 (1)
Highly Dissatisfied					Highly Satisfied

Why? Comments?

1. This is the first time for me to follow the new method in the workshop and it seems to me it was very interesting and will achieve good goals.
2. Some tendency to get bogged down in process and not all the elephants were recognized, let alone discussed – but there was progress!
3. I have learned about diversity of points of views and solutions while working in the same field with different actors/players.
4. Good representation of relevant viewpoints.
- 5.-7. No Comment.

2. Satisfaction with workshop format:

1	2	3 (2)	3.5 (1)	4 (2)	4.5 (2)	5
Highly Dissatisfied						Highly Satisfied

Why? Comments?

1. Discipline exercised in an excellent manner.
2. A good format but still need a more refined one to make it much easier for the participants.
3. See #2 above plus – Day 2 might have been a time to change mix at tables. Also, it was good to have developing countries more visible.
4. Not enough interaction between groups (tables) because of very short plenary sessions.
5. Good conceptional framework for problem solving. Uneven quality of facilitation/summarization.
6. Very interactive! Sorry for my bad English!

3. Satisfaction with results of the 1 ½ day collaborative effort:

1	2 (1)	3	4 (5)	5 (1)
Highly Dissatisfied				Highly Satisfied

Why? Comments?

1. As a starting point, follow up revision to Resolution 40.
2. Good results at the end of the workshop but still needs improvement in the future.
3. I tend to jump into action – the more specific the better so I would have liked to have some more direct (detailed, committed?) actions; but as I have noted progress has been made and I know how difficult that can be. Good work!
4. There is room for hope in developing meteorology and related fields in a collaborative way; public/private sectors developed and developing countries.
5. Good start for a long term process; might have been better informed if (1) Summaries were more succinct from our group and (2) Better definition of NCB before breakouts.
6. I go back to my country with new ideas.
7. No Comment.

4. Other Comments or Suggestions?

1. Good luck to us all.
2. Discussion time was too short.
8. Some sense at the beginning about the background/roles of all the players at the tables would have been useful.
9. This exercise is valuable and should be followed up.
10. This forum highlighted the differences.
11. Excellent summarization (and I assume, facilitation) by Cindy Zook from Table 3.
7. No Comment.